Design for Patient Safety

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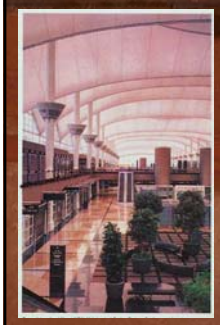
'I have seen in fevers, the most acute suffering produced from the patient (in a hut), not being able to see out of the window and the knots in the wood being the only view. I shall never forget the rapture of fever-patients over a bunch of bright-coloured flowers'.

Florence Nightingale, 1860

We shape our buildings and afterwards, our buildings shape us.

--Winston Churchill



Since the 1999 release of the IOM report, "to Err is Human" many efforts have been made to increase patient safety initiatives in healthcare facilities.

Following this…..

Clinical Effectiveness of Safe Practices	
Intervention	**Results**
Physician computer order entry	81% reduction of medication errors[a,b]
Pharmacist rounding with team	66% reduction of preventable adverse drug events[c] 78% reduction of preventable adverse drug events[d]
Rapid response teams	Cardiac arrests decreased by 15%[e]
Team training in labor and delivery	50% reduction in adverse outcomes in preterm deliveries[f]
Reconciling medication practices upon hospital discharge	90% reduction in medication errors[g]
Ventilator bundle protocol	Ventilator-associated pneumonias decreased by 62%[h]

Great, but…….

It all seems to center around practitioner interventions rather than environment



Design Matters….

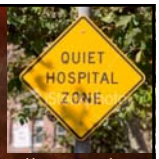
There is strong evidence that healing environments may lead to:

- Faster patient recoveries
- Reduced pain
- Fewer cases of infection
- Greater patient satisfaction
- Reduced stress levels among staff
- Attraction and retention of quality staff

Environmental Aspects to Consider

- **Outpatient Setting**
  - Easily accessible parking
  - Guides or clear signage
  - Available mobility aids or assistance
  - Clear walkways
  - Thoughtful placement of clinics

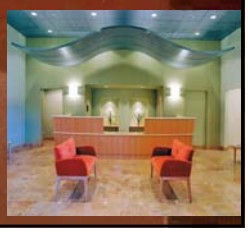
Environmental Aspects to Consider



- **Noise**
  - Hospitals have grown noisier over the past 50 years, with sounds in patients room that rival that of a jackhammer.
  - The decibel level at a typical hospital during the day has risen from 57 in 1960 to 72 today. At night, the noise level has gone from 42 to 60 decibels since 1960. Some sounds soar to much louder levels.
  - Guidelines from the World Health Organization call for a maximum of 35 decibels.

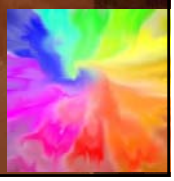
Environmental Aspects to Consider

- **Light**
  - One trend in healthcare lighting design is to create spaces with warm, relaxing light, generating an environment with a residential rather than an institutional feel.
  - Designers are choosing lighting in corridors that is indirect and evenly washes the walls with light.



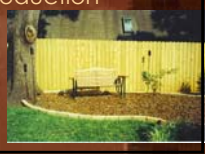
Environmental Aspects to Consider

- **Color**
  - Color has a profound effect on us on all levels, physical, mental, emotional and spiritual
  - Colors have meaning, e.g.,
    - Red - Danger, Power, Strength
    - Blue – Stability, peace, trust
    - Green – growth, harmony



Environmental Aspects to Consider

- **Privacy (Single Patient Rooms)**
  - Improve the quality of a patient's surroundings
  - Reduce nosocomial infection
  - More opportunities for family interaction
  - Better sleep through noise reduction
  - Reduced med errors and falls
  - Less time in hospital
  - Better healing!



Environmental Aspects to Consider

- **Patient Aids**
  - Handrails
  - Clutter
  - Visibility
  - Accessibility

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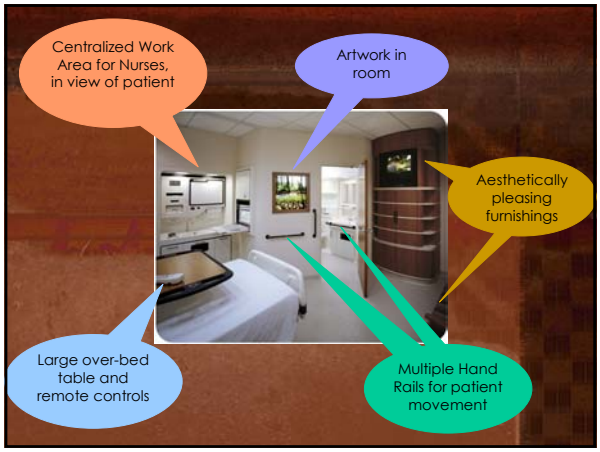
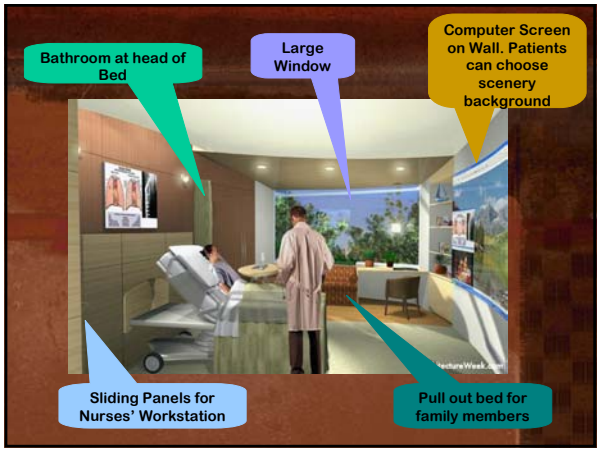




Environmental Considerations for Staff

- **Safety is just as important for staff**
  - Healthcare industry workers sustain 4.5 times more overexertion injuries than any other type of worker
  - Back injuries to nurses have point prevalence of approximately 17 percent, an annual prevalence of 40–50 percent and a lifetime prevalence of 35-80 percent
  - This could rise given the increase in bariatric patients

The fix is easy……

Other Staff Considerations

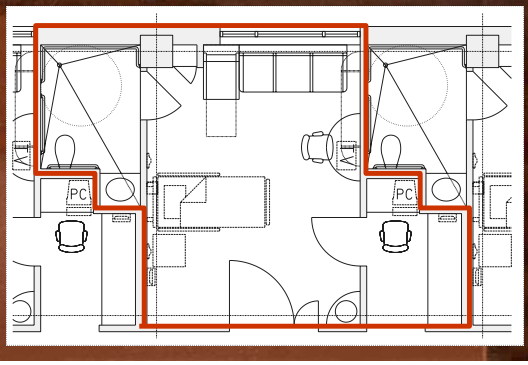
- Noise Reduction
- Standardization
- Routinization
- Clutter
- Support
- More Help!!!!!

St. Joseph's Model

- Use failure Modes and Effects Analysis (FMEA) at every design stage
- Engage a wide representation of stakeholders in the design process
- Create an organizational leadership structure to support the design process
- Design around major organizational processes. Begin mock-ups and equipment planning on Day 1
- Consider the human factors and environmental effects on staff as well as patients and families
- Design around vulnerable patients
- Design for flexibility, scalability, and accessability to adapt to changes in technology and work processes.
- Design for maximum standardization
- Provide accessible information systems at the point of service
- Address known hazards in the physical environment

Patient Safe Room

St. Joseph Hospital, West Bend, IN



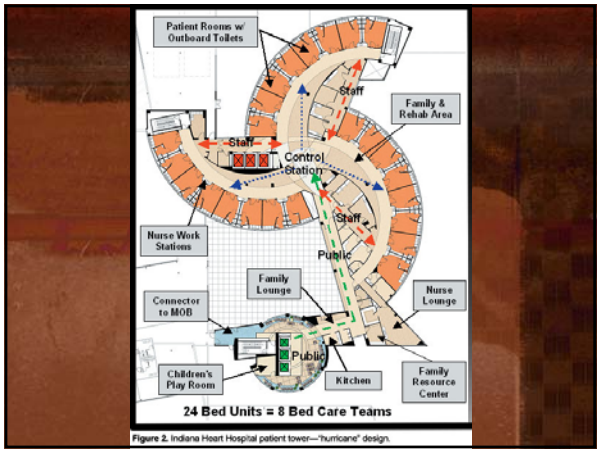


Figure 2. Indiana Heart Hospital patient tower—"hurricane" design.

The future is here.....

The time is now.....